

**REMARKS**

Claims 1 and 2 are pending in this application. By this Amendment, claims 1 and 2 are amended to correct minor errors and claim 2 is also amended to more clearly distinguish over the applied references.

**I. Pending Claims 1 and 2 Define Patentable Subject Matter**

The Office Action rejects claim 1 under 35 U.S.C. §103(a) over U.S. Patent No. 5,541,463 to Ellzey, Jr. (hereinafter Ellzey) in view of the allegedly admitted prior art (hereinafter AAPA). Applicant respectfully traverses the rejection.

In particular, Applicant submits that taken alone or together, neither Ellzey, nor the AAPA suggests or discloses a reluctance type resolver comprising a stator, constructed from a magnetic material, having a plurality of excitation teeth, each of which is wound by an excitation winding, a rotor having magnetic salient sections that are placed to oppose said excitation teeth, and a detector for detecting the position of said rotor, by detecting a current or voltage of said excitation winding which changes with different phase in response to motion of said rotor, wherein said excitation winding is wound on each of the plurality of excitation teeth so that the magnetic fluxes through all excitation teeth have the same direction and the stator includes bypass magnetic path teeth passing a magnetic flux having a direction opposite to the direction of said excitation teeth, wherein the bypass magnetic path teeth are not wound by said excitation winding, as recited in claim 1.

Ellzey teaches a reluctance type resolver comprising a stator, having a plurality of excitation teeth, each of which is wound by an excitation winding, a rotor having magnetic salient sections that are placed to oppose said excitation teeth, and a detector for detecting the position of said rotor. However, Ellzey discloses that in a preferred embodiment of the invention. The sensing means 222 will comprise a Hall Effect sensor, or a light sensing device. Thus, from this description, it is clear that the position detection performed by the detector 222 in Ellzey, is performed using a Hall Effect sensor or a light sensing device, not

the excitation winding 140d. As such, Ellzey, not only fails to suggest or disclose a detector that detects a position of a rotor by detecting a current or voltage of an excitation winding, as recited in claim 1, but also, it would not have been intuitive to modify Ellzey to detect a position in this way, as alleged by the Office Action. The winding 140d of Ellzey is provided for generating the magnetic flux for rotating the rotor 16b and does not serve for detecting a position. The object of use of the winding in Ellzey, Jr. is completely different from what is recited in claim 1. In Ellzey, the position detection is performed by exciting a direct current in the windings on the rotor side using a DC current source 214 and via a slip ring, and by detecting the magnetic flux using a Hall Effect sensor. Ellzey therefore also differs from the present invention in that the windings 70d, 72d, 74d and 76d must be provided on the rotor side rather than the stator side.

In view of these distinctions, Applicant submits that claim 1 is patentable over the combination of Ellzey and the AAPA and requests that the rejection of claim 1, under 35 U.S.C. §103(a) be withdrawn.

The Office Action rejects claim 2 under 35 U.S.C. §103(a) over U.S. Patent No. 5,777,416 to Kolomeitsev in view of the AAPA. Applicant respectfully traverses the rejection.

In particular, Applicant submits that neither Kolomeitsev nor the AAPA suggests or discloses a reluctance type resolver comprising a stator, constructed from a magnetic material, having a plurality of excitation teeth, each of which is wound by an excitation winding, a rotor having magnetic salient sections that are placed to oppose said excitation teeth, and a detector for detecting the position of said rotor, by detecting a current or voltage of said excitation winding which changes with different phase in response to the motion of said rotor, wherein each of said excitation windings is wound on each of the excitation teeth for a pair of adjacent excitation teeth such that the magnetic flux through each of the paired excitation teeth has directions opposite to each other, and said excitation windings for each

pair of adjacent excitation teeth are connected in series, an identical excitation signal is supplied to one end of each of said excitation windings for each pair connected in series, the excitation teeth are provided on said stator so that the pitch of each excitation tooth for each pair of adjacent excitation teeth equals an integer multiple of the pitch of the magnetic salient sections of the rotor, and both excitation teeth in each pair of excitation teeth have the same phase for magnetic resistance change with respect to the motion of the rotor.

Kolomeitsev fails to teach that the pitch of each excitation tooth for each pair of adjacent excitation teeth equals an integer multiple of the pitch of the magnetic salient sections of the rotor. The Office Action fails to identify any portion of Kolomeitsev which could be relied upon to teach this feature. Moreover, Applicant submits that this feature is not suggested or disclosed in the AAPA.

As further evidence of the difference between Kolomeitsev and claim 2, the excitation circuit of Kolomeitsev is more complex than that of claim 2 because, as shown in Fig. 1 of Kolomeitsev, three windings 24A, 24B and 24C are selectively excited. In contrast, according to claim 2, the excitation circuit is simplified because an identical excitation signal is supplied to one end of each of the excitation windings for each pair connected in series. Thus, claim 2 is distinct from Kolomeitsev on this basis as well.

In view of these distinctions, Applicant submits that claim 2 is patentable over the combination of applied references. Accordingly, Applicant respectfully requests that the rejection of claim 2, under 35 U.S.C. §103(a), be withdrawn.

## **II. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 2 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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